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TITLE: Method and apparatus for segmentation and assembly of
data frames for retransmission in a telecommunications
system

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INVENTOR-INFORMATION:

| NAME | CITY | STATE | ZIP CODE | COUNTRY |
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US-CL-CURRENT: 370/474, 370/209, 370/320, 370/342, 370/471, 714/748
, 714/749

ABSTRACT:

A method and apparatus for segmentation and assembly of data frames for retransmission in a telecommunications system. Zero padding of radio link protocol (RLP) data frames carrying retransmissions is minimized. ~~RLP data frames carrying retransmitted data of an RLP data frame may also carry at least one newly transmitted RLP data frame or at least one other complete or partial retransmitted RLP data frame.~~ The RLP data frames are passed to a lower level protocol and transmitted in at least one transmission frame.



12 Claims, 7 Drawing figures

Exemplary Claim Number: 1

Number of Drawing Sheets: 3

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Application Filing Date - AD (1):
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Brief Summary Text - BSTX (10):

The **RLP** control frame may function as a negative acknowledgment (**NAK**)

RLP

control frame to request retransmission of unreceived data frames. An **NAK**

RLP

control frame includes a 4-bit frame-type (CTL) field, a 4-bit length (LEN) field, an 8-bit FIRST field, an 8-bit LAST field, a reserved field (RSVD), a frame check sequence field (FCS) and padding. An **RLP** control frame having the

frame type field set to indicate negative acknowledgment (**NAK**) may then be used

to request retransmission of a particular data frame or a particular sequence of data frames. For example, a mobile station expecting a data frame having a particular sequence number would transmit an **NAK** control frame to the base station if the mobile determined that the data frame was missed from the sequence numbers of received **RLP** frames. The FIRST and LAST fields of the

RLP

NAK control frame are used to indicate the particular data frame or sequence (indicated as a range beginning at the sequence number indicated by the FIRST

field and ending at the sequence number indicated by the LAST field) of data frames that are requested to be retransmitted. In IS-707, the number of requests for retransmission of a data frame is a set number and the initiation of subsequent requests for retransmission after the initial **NAK** control frame is sent is controlled by an **NAK** retransmission timer. When **RLP** frames are carried as primary or secondary traffic, the retransmission timer is implemented as a frame counter. The **NAK** retransmission counter for a data frame is started upon the transmission of an **NAK RLP** control frame requesting retransmission of that data frame.